

WHAT IS CLAIMED IS:

1. A method for dissipating heat from a localized area within a semiconductor die, the method comprising:

providing a semiconductor die constructed and arranged to have at least one conduit portion therein, at least a portion of the conduit portion being proximate to the localized area, the conduit portion being at least partially filled with a heat-dissipating material;

absorbing, by the conduit portion, heat from the localized area; and

dissipating, by the conduit portion, at least a portion of the heat away from the localized area.

2. The method of claim 1, further comprising dissipating, by a spreader external to the die, at least a portion of the heat, the spreader being proximate to a second localized area in the die, the second localized area being proximate to a second portion of the conduit portion.

3. The method of claim 1, wherein the heat-dissipating material comprises a fluid.

4. The method of claim 3, wherein the fluid is a liquid.

5. The method of claim 4, wherein the dissipating by the conduit portion includes evaporating by the liquid to form a vapor, releasing heat by the vapor, and condensing of the vapor.

6. The method of claim 1, wherein the heat-dissipating material comprises a material having high conductivity.

7. The method of claim 6, wherein the dissipating includes spreading heat by the material having high conductivity.

8. The method of claim 6, wherein the material having high conductivity comprises copper.

9. The method of claim 6, wherein the material having high conductivity comprises silver.

10. The method of claim 1, wherein the localized area is proximate to a floating point mechanism in the die.

11. The method of claim 1, further comprising laser-drilling or etching the conduit portion on a back face of the die.

12. An arrangement for dissipating heat from a localized area within a semiconductor die, comprising;

a semiconductor die having at least one conduit portion, at least a portion of the conduit portion being proximate to the localized area; and

a heat-dissipating material at least partially filling the conduit portion,

wherein the conduit portion is constructed and arranged to absorb heat from the localized area and to dissipate at least a portion of the heat away from the localized area.

13. The arrangement of claim 12, wherein the conduit portion is formed in a back face of the die.

14. The arrangement of claim 12, wherein the heat-dissipating material comprises a material capable of changing phase.

15. The arrangement of claim 14, wherein the heat-dissipating material comprises water.

16. The arrangement of claim 12, wherein the conduit portion is substantially filled with the heat-dissipating material.

17. The arrangement of claim 16, wherein the heat-dissipating material comprises a material having high conductivity.

18. The arrangement of claim 17, wherein the material having high conductivity comprises copper.

19. The arrangement of claim 17, wherein the material having high conductivity comprises silver.

20. The arrangement of claim 12, further comprising a spreader external to the die, the spreader constructed and arranged to dissipate at least a portion of the heat, the spreader being proximate to a second localized area in the die, the second localized area being proximate to a second portion of the conduit portion.

21. The arrangement of claim 20, wherein the spreader is a thermal spreader or an integrated heat spreader.

22. The arrangement of claim 12, wherein the conduit portion is cylindrical.

23. The arrangement of claim 12, wherein the conduit portion is conical.

24. The arrangement of claim 12, wherein the conduit portion is T-shaped.

25. The arrangement of claim 12, wherein the arrangement comprises a plurality of conduit portions, the conduit portions being staggered relative to each other.

26. The arrangement of claim 12, wherein the conduit portion has a hole therein.

27. The arrangement of claim 12, wherein the conduit portion has a channel therein.

28. The arrangement of claim 12, wherein the conduit portion has a via therein.

29. The arrangement of claim 12, wherein the conduit portion has a slot therein.

30. The arrangement of claim 12, wherein the conduit portion has a tube therein.

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